Case Study of Practice

Diversifying the master's research project: reflections on an initiative in architecture, planning and environmental management

Barry Goodchild, Louisa Cadman and Cate Hammond (Sheffield Hallam University)¹

Abstract

A distinction may be made between a dissertation as an output of a master’s research project and an artefact as an output. The distinction is not total and it is possible to provide a unified framework of guidance and assessment for artefacts and dissertations in applied subjects in the architecture, planning, environmental management and allied subject areas. However, a dependence on different skills continues to prevent any extensive crossing over between one applied area and another. The preparation of a research project at masters level, whether an artefact or a dissertation, is in any case a demanding exercise where the quality of individual supervision and feedback are the decisive influence on student experience. This account is based on the experience of an initiative undertaken at an English university in the academic year 2013/2014.

Key words: master’s degree; artefact; dissertation

The national descriptor for master’s qualifications, prepared by the Quality Assurance Agency for England and Wales (QAA, 2010, 12) states that ‘at least a third of the programme is devoted to a research project, leading to a dissertation or the production of other output such as an artefact, performance or musical composition’. The research project is integral to

¹ b.j.goodchild@shu.ac.uk
the course and the ability to complete such a project is a necessary learning outcome and a necessary means of developing relevant skills (ibid, 14).

The postgraduate courses in the architecture, planning, environmental management and allied fields at Sheffield Hallam University follow the pattern specified by the QAA. A third of the programme is devoted to a research project, covering a combination of two modules: Applied Research Methods (ARMs) (15 credits) and the Major Research Project (45 credits). ARMs and the Major Project are directly linked so that coursework submitted for ARMs involves the preparation of a research proposal that is then supervised as part of the Major Project. However, until revalidation in 2013, only Msc Technical Architecture allowed students to prepare an ‘artefact’. Otherwise students were only allowed to complete a dissertation. In contrast, following revalidation, the possibility of preparing an artefact has been extended to MSc’s in Environmental Management, Geographical Information Systems (GIS), Urban and Regional Planning and Urban Regeneration.

The rationale was to diversify the range of possible research outputs, to provide students with a greater range of choice in their research work, to promote their employability and to enable both staff and students to learn from practices in related disciplines. The importance of breaking down professional boundaries in the built environment has been recognised since at least the publication of the Egan report (ODPM 2004) and its observation that a move towards ‘sustainable communities’ and a greater emphasis on urban regeneration, required more inter-professional and partnership working. Interprofessional working, in turn, requires that the student and future employee is not just able to undertake research but able to present results to a variety of different audiences and able in addition to evaluate the work undertaken by other professionals.

At the same time, the diversification of research outputs raises various questions as to its possible form and implications. One of the external assessors at the time of course revalidation stated:

‘While the option for students to produce an ‘artefact’ is very interesting and is clearer in relation to design-based courses, more on what constitutes such an artefact and how the production and assessment of this would meet the course and professional body objectives/Learning Outcomes is needed’.

As is apparent in the comment of the external assessor, the objectives and learning outcomes of the common, multi-disciplinary research project were accepted. The question was how those learning outcomes could be achieved and how guidance could be given to students.

This presentation documents the introduction of the combined artefact/ dissertation module, drawing on the following sources of information: three focus groups with students on different courses, consultations with specialists in higher education and an analysis of previous student work. Focus groups were preferred to the use of a student questionnaire as they generally provide a richer body of qualitative material and are more likely to generate useable quotations relevant to the main research themes. They concerned respectively GIS (three students), Technical Architecture (six students) and Urban Planning, Urban
Regeneration and Environmental Management (eleven students). The analysis of existing student work was limited by the timing of the report and was confined to work already available under existing dissertation and, in the case of architecture, under the guidelines for a design-based project.

The presentation is organised around the questions, as follows:

1) What is an appropriate ‘artefact’? How is ‘artefact’ interpreted in different disciplines and by current students?

2) How might an artefact be constructed and presented in the context of an MSc? What range of examples might be shown to students?

3) How can staff best guide students in the choice between preparing an artefact or a dissertation?

In addition, in the final section, attention is paid to the student experience and about how best to support students in completing a major project at MSc level.

What is an appropriate artefact? How is ‘artefact’ interpreted?

Any enquiry into the role of artefacts and dissertations at the master’s level takes place in a near void of relevant educational research in Britain. A search in the keyword search facility of the Higher Education Academy, using the key terms ‘dissertation’, ‘artefact’ or ‘master’s’, found no direct precedent. Nevertheless, it is possible to construct the background to the artefact/dissertation distinction from the published literature at an undergraduate and doctoral level, notably in the fields of design education and geography and, in addition, from discussions of the broad relationship between research and teaching in higher education.

At an undergraduate level, work by Healey, notably Healey et al (2013) undertaken for the Higher Education Funding Council for England, provides the most cited analysis of the case for a rethink and diversification of the undergraduate dissertation. A rethink, the authors suggest, is necessary given the increased diversity of student intake, the changing character of research, the increased use of mass methods of delivery, including on-line delivery and the increasingly complex demands of professional practice. Healey et al’s interpretation of diversification is still relatively limited, however. The examples of good, innovative practice mostly consist of exercises where students work with community groups or business and where the output consists of either a written dissertation or a verbal presentation. It is not clear, in any case, why such collaborative work should be treated as a replacement for a conventional dissertation rather than a separate exercise in consultancy or work-based learning. It is possible, for example, to organise a programme of study that includes both.

Work-based learning also figures in an account of innovative, alternative and creative undergraduate geography dissertations as undertaken by Hill et al (2011). In addition, this latter includes examples of outputs that fall clearly within the category of artefacts. These include ‘mapping products and visualizations’, notably of the type that can be produced
through GIS techniques and ‘creative forms—art and design, photography and video, online technologies’. The skills for such creative products may, however, require additional skills development in the context of a geography degree. An implication of both Healey et al (2013) and Hill et al (2011) is that innovation in UK undergraduate dissertations has lagged behind innovation in other aspects of the curriculum and teaching method.

Research in the various fields of planning, the built environment and environmental management is usually tied into vocational courses and is essentially applied research. In this context, a distinction may be drawn between theorising out of practice and theorising about practice. The distinction has been most thoroughly worked out for professional doctorates (Candy 2006), but may be readily applied to master’s work. Theorising out of practice leads to a product that is itself a contribution to knowledge and to practice; it is a created artefact, based directly on practice. Examples include drawings, designs, musical compositions, software systems, installations, exhibitions, media products and so on, all of which involve an element of ‘material’, rather than conceptual thinking. Material thinking is where the logic of design or the visual acquires a life of its own (Bolt 2006). The development of a new methodology or the application of an existing methodology in a new context, while not involving material thinking might also count as an artefact, depending on the originality of the application.

In contrast, theorising and research about practice is concerned with the development of knowledge about experiences, practices and traditions of debate, in a way that enables critiques, understanding or application (Candy 2006). This latter exercise corresponds to a conventional dissertation or research thesis and is practice-led rather than practice-based. Research and theory about practice may itself take a variety of different forms - for example studies of organisations, studies of trends, studies of the effectiveness and impact of policies, studies of the interaction between practice and society or the economy and so on. Such research may, moreover, use either quantitative or qualitative methods or a mixture of the two.

These different modes of research and theory suit some disciplines more than others. Theorising out of practice suits, for example, the method of architecture, whereas theorising about practice is often the chosen method for professional disciplines that are concerned about the management and development of the environment, including planning, urban regeneration and environmental management. The most likely reason for this is the relationship between the producer (the author, researcher or artist) and the product. In architecture and creative disciplines, the producer of a work can present that work of itself, as either their personal product or as the product of their firm. In planning and the management professions, the contributions of the individual become diluted in a collective and sometimes political process.

As the various examples suggest, the distinction between an artefact and a conventional dissertation is best considered as a continuum, in which different elements of each can be mixed in hybrid forms. Practice-led forms of knowledge suitable as the basis of a dissertation may depend on analytical techniques that can be developed as software or
expert systems (an artefact). Geographical Information Systems provide such an example. Architectural research can also take the form of a design or a practice-led dissertation, reflecting on trends or schemes or analysing a problem or a mixture of the two. (See, for example Sequeira 2012).

For the students in our focus groups, the distinction between an artefact and a dissertation was not always understood, though much depended on their previous experience. The MSc Architecture students were familiar with the concept of a design project and its distinctiveness compared to a dissertation. In the Environmental Management, Urban Planning, and Urban Regeneration focus group, the students noted the absence of examples of artefacts as a hindrance to understanding the distinction. The previous tendency of students not to produce artefacts is, to an extent therefore self-perpetuating.

The most common understanding of the distinction was in the form of the output, namely that an artefact involves less writing and in the distinctive skills involved in its preparation: design skills for Urban Planning and Urban Regeneration and computing skills for GIS students. In the words of a comment made by a student in the Urban Planning, Environmental Management and Urban Regeneration focus group:

‘the dissertation is a research project but the artefact is a research project plus a design project so … the work is double but with less writing’.

The students’ understanding tends towards an over sharp, black and white distinction between the two approaches. However, it offers a starting point in the context of their chosen professions.

How might an artefact be constructed and presented in the context of an MSc? What range of examples might be shown to students?

Providing guidance about research rests on a paradox. There are many, many different ways of preparing and presenting a masters thesis, whether a dissertation or artefact. There are also many, many different ways of undertaking research and many different philosophies of research, with no agreement as to whether a single approach is either possible or desirable. Creative students, and one might hope that studying at MSc level encourages creativity, might consider developing alternative forms of presentation and headings. In addition, specifying a prescriptive model can sometimes cause students to feel that they are being constrained in one direction or another.

Nevertheless, as was apparent in the focus groups, many students want clear guidance on how to prepare, structure and present a research output. They want guidance in the context, moreover, of studying on a professional course where it is not possible to go into any detail about the various background philosophies and approaches.

Guidance in scientific subjects as well as in the more technical aspects of building and estate management tends to favour a deductive, positivist approach, based on the identification of testable hypotheses generated by theory. Hypotheses are tested and refined in different situations and under different conditions to determine the causal factors that
determine a specific outcome. The deductive, positivist approach has, fallen out of favour in urban planning because it suggests a degree of precision that is impossible to realise in practice and because it also fails to consider issues relating to politics and power (Allmendinger, 2002: 2009). It also makes little sense for the construction of a created artefact.

In this context, it is helpful to draw on hermeneutic methodologies, as developed by Gadamer (1989) and Alvesson and Sköldberg (2008). Hermeneutics, as understood in the social sciences, means ‘the study or analysis of how texts, utterances, or actions are interpreted’ (Oxford English Dictionary on-line). The source material is generally too abstract for students and it does not of itself provide a framework for the construction of a research report or thesis. However, hermeneutics provides some helpful pointers towards the construction of valid knowledge, irrespective of whether this an artefact or dissertation. Hermeneutics emphasises research as the construction of a narrative rather than merely as an exercise in reporting results or a description. It also emphasises, as part of this narrative construction, the importance of examining a subject in its context, of controlling values by locating the research within an explicit tradition of ideas, of working within a circle so that later stages of the narrative refer back to earlier ideas and of trying to promote a sense of coherence through relating parts to the whole, noting incompatible elements as appropriate. Further, as developed by Alvesson and Sköldberg (2008) hermeneutic analysis can be multi-layered so that it considers issues relating to subjective assessments, questions of power and questions of difference.

Previous pragmatic analysis of student work, together with the implications of hermeneutics, suggested that a common framework might be possible covering both artefacts and dissertations in all the relevant courses. The framework comprises:

- context;
- problem;
- literature review;
- method;
- analysis and conclusions.

Detailed analysis of five completed good quality MSc theses showed that such a framework is indeed feasible. The analysed work comprised a mixture of design-based artefacts, dissertations using mostly qualitative methods and a hybrid, difficult to classify work based on spatial statistics. For the sake of brevity, three examples may be cited:

**Example (artefact: design-based): Designing modular housing for urban infill sites.**

**The context:** Chinese cities are characterised by growing land shortages, escalating house prices and increased efforts in finding development sites.

**The problem:** is it possible to design modular homes for narrow sites in a way that also meets Chinese minimum daylight standards?

**The literature review:** design precedents can be identified and analysed from narrow-fronted dwellings in Japan and from examples of prefabricated housing in Europe and China.
The method: a case study is taken and its potential is examined. The artefact is generated after a consideration of Chinese housing standards.

Analysis and conclusions: narrow infill housing is feasible as are modular solutions. However, a range of different sizes is necessary.

Example (dissertation): Assessing the role of Local Strategic Partnerships (LSP’s)

The context: LSPs were established by statute in 2000. They have subsequently fallen out of favour in national policy, notably after the election of a new government in 2010.
The problem: what is the future for LSPs, as seen by practitioners.
The literature review: previous studies have shown the prerequisites for successful partnership working, including such factors as the availability of resources and the existence of trust between different parties.
The method: the experience of the part-time student had provided insights and had also shown the value of partnership working. To avoid conflicts of interest and various methodological problems, it was necessary to undertake a case study in an adjoining district, rather than the current place of employment. As part of the case study, the student also sought to develop and apply a theory of change.
Analysis and conclusions: The case study showed that the LSP had become a sustainable institution, had retained the support of its members and was succeeding in bringing together different agencies. Time constraints meant, however, that it had not proved possible to develop a full theory of change.

Example (hybrid - an artefact presented as a dissertation): A housing atlas for South Yorkshire

The context: a new landscape of housing has emerged as a result of tenure change and problems of affordability;
The problem: how might this new landscape best be visualised through a housing atlas?
The literature review: a housing atlas must consider the methodologies for assessing housing need and demand, as well as access to housing;
The method: indicator sets are developed based on the 2011 census and other sources, based on three options affordable rent, low cost home ownership and build for rent;
Analysis and conclusions: The results reveal an uneven pattern of demand and economic potential and highlight problems of poor rent yields. The atlas proved a worthwhile exercise but would need to be developed further using more accurate data.

The framework answers the question about how an artefact, as well as a dissertation might be constructed. The use of a common framework is, moreover, helpful in avoiding confusion in cases that are not easy to classify or where the intention is to deliberately cross boundaries. The difference between artefact and dissertation lies in the content rather than the form or structure of work and lies in particular in the use of visual and statistical/ software generated material in an artefact.

Of these various elements, the reference to method and methodology can cause confusion amongst some architectural students, as was revealed in the focus group. Designers
commonly use an intuitive method in contrast to the range of formal methodologies available in social and economic research. For relevant staff, moreover, methodology in architecture merely means a demonstration of the workings, including examples of early drafts.

How can staff best guide students in the choice between preparing an artefact or a dissertation?

One way of providing advice is to suggest that students choose a topic and then decide whether the subject matter is better suited to the preparation of an artefact or a dissertation. Students still need the relevant skills to complete the work, however, as was emphasised by both staff and by students.

The following comments made in the focus group for Urban Planning and Urban Regeneration students illustrate the point. Urban planning is a professional activity characterised by a mixture of design and analytical work. Yet students saw their work as clearly falling into one category or the other and were influenced by their own personal assessment of strengths and weaknesses.

Student 1: I just don’t think that I have the skills to do an artefact, I can write stuff, what I think is an artefact in my head is not stuff that I think I’m skilled to do.

Student 3: I think I’m the other way round, … I’ve chosen what I’ve chosen because I usually can explain my ideas clearly in drawings and practical work and presentations, but I feel difficulty usually explaining my ideas in a written way.

This latter viewpoint was especially common amongst the architectural students, all of whom preferred to express themselves through drawing rather than analysis. Some had previous experience of completing a dissertation at undergraduate level but still welcomed the option of doing an artefact. For some, a lack of familiarity with English as a language reinforced the preference for drawing and design. A student with a background in architecture and studying urban regeneration expressed similar views.

In the GIS focus group, the same issue arose in a different way. Students talked about the importance of access to data and the familiarity of a dissertation and did not want to move away from the type of project that they knew they could complete to a high standard. When asked how they chose a research topic, one student remarked

'practically you end up doing something which you think is feasible and you know you can do well on, rather than something slightly more interesting that you can’t do as well on'.

Again when asked ‘are you confident that you know what the difference is between a dissertation and an artefact?’, students answered as follows:

Student 1: … an artefact is more the development of a programme, rather than the development of an idea, so it’s..

Student 2: sort of a tool used for GIS

Student 1: …a tool, something that you make. So using, creating something with Python and things like that. Well, I haven’t got a clue how to do that, all I know is how to do a dissertation.
The comments of students suggest that, certainly by the time that they study research methods towards the end of the first semester, nearly all have a clear and fixed idea of their strengths and weaknesses. These same comments also suggest a degree of stability in student choices. Previous patterns and differences between courses are likely to persist.

The fixed character of student expectations reinforces the message of Healey at al (2013) and Hill et al (2011) that more should be done to widen the student experience of research at the undergraduate level. It is also possible that the staff who teach in the earlier stages of the MSc courses are reinforcing these long standing academic distinctions. At the same time, there are exceptions of students who wish to undertake a design project on a non-architectural course or a research dissertation whilst studying architecture. These exceptional cases also need support.

**The student experience and support**

Given the timing of the focus groups, in the middle of semester 2, the students almost universally focused on the research methods module as the main influence on their research. This latter was praised for encouraging the development of ideas, as indicated in the following exchange;

**Student 1:** I kind of had an idea about what I wanted to do and ARMs 1 (the first coursework undertaken in the research methods module) helped me work out where that fitted into the architectural design and where that might fit into the industry in the UK to a UK market for housing. … So it helped me think a bit more about how it fitted in to real life really.

**Student 2:** I think the feedback was the important thing to direct you to the right way for ARMs 1.

The only dissenting voice was a student who complained that the research methods coursework could be made shorter and risked repeating material covered in the final submission. As another student pointed out, however, students are not penalised for including research methods material in their final submission.

The way students described the development of their ideas likewise shows the importance of research methods coursework and, in particular, the importance of two coursework submissions with a gap between them:

**Student 3:** if there’s no first ARMs then maybe you (would do) something in a wrong way and then you’re stuck in it.

**Student 1:** The time period gives you time to change if they don’t think it’s going to work so at least they tell you that now rather than in September when they’ve have marked it and they go ‘that’s not going to work, that’s not going to work’

The direct interaction between the student and the supervisor and the quality of feedback would seem crucial to the learning process, much more so than the formal classes or written guidance.
Despite the praise for the research methods coursework, students commonly find the task difficult. Many students come from relevant undergraduate degrees. However, dissertations and design projects at the undergraduate level are commonly shorter and less ambitious. Some students may have been out of higher education for many years. Other part-time students come to the course from a Diploma feeder course and have never done a substantial research exercise. The GIS course has students from the Army who left school at 16. Other students come from overseas where different conventions apply.

The challenge of the major project makes timing a sensitive issue. On one hand, it is desirable to encourage students to think about the subject as soon as possible. In the words of one of the architectural students: ‘it’s a good idea starting it early, making a start and thinking about it earlier’. On the other, those unfamiliar with the methods at master’s level wanted more time, as is illustrated in the following exchange in the focus group for planning, regeneration and transport students:

**Student 1:** I think I knew I’d have to do some sort of major project and I expected it to be quite difficult I think ….

**Student 2:** I think I expected the research project to perhaps be in the second semester as opposed to the first semester so we could get some experience of the course, do some modules and have some knowledge and understanding of planning and urban regeneration so we could apply that to our project.

**Student 1:** Yeah, I think I’d go a long with that, it did feel a bit early, I think that’s what you’re saying [student 2], I ….. felt that the initial lectures we had about it were almost as if we already knew what we were doing and it all felt a bit scary, for that reason I think.

Later, in the same session, some students expressed difficulty in understanding the academic requirements,

‘the thing is I know what is required from doing a project in real life, a live project or a major project in real life, but to make that project academic, I don’t know what to do extra to make it academic or what not to do to make it academic, specifically for MSc course'.

The research methods module starts just before Christmas in Semester 1, with submission of coursework in Semester 2. The final date of submission for the project is within a maximum of about 15 months after enrolment for full-time students and for part-time students within a maximum of approximately 36 months after enrolment. The dates cannot easily be changed. The comments of the students are, instead, a reminder that the preparation of a research project at masters level is a demanding task and the main way in which masters courses in the built environment field are distinguished from those at the undergraduate level.

**Conclusions**

The diversification of the master’s research project achieved through the introduction of a joint artefact/ dissertation programme of study has had no apparent adverse consequences.
The various changes have been implemented without any significant disruption, if any disruption at all. In addition, the introduction of the new 'Major Project' module has encouraged staff and students to think more carefully about the aims and characteristics of a research project at master’s level. It surely remains, moreover, in the interests of students to understand and appreciate a variety of different approaches and methods.

The promotion of a diversified research module has not succeeded in breaking down professional and disciplinary boundaries, however. Hill et al (2011, 343) suggest that, at undergraduate level, the ‘successful adoption of alternative, creative and innovative approaches’ may require additional skills development and preparation. In a 12 or 15 month MSc, such skills development, for example in design or the use of software is probably impractical, unless the student already has training or an aptitude. Students know this, which is why they are cautious in their choice of project.

Though the focus groups were not designed explicitly to look at issues of student support, they also throw light on the factors that promote the successful completion of a master’s thesis, of whatever type. The factors are simple to say and to identify, but more difficult to implement. They concern the quality of supervision and feedback and the promotion of a questioning, research-oriented attitude amongst students in the early stages of the master’s course.

References


